
Malagasy Instrumental Nominalizations*

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1 Introduction

This paper explores the morphosyntactic properties of two different types of instrumental nominalizations in Malagasy (Austronesian). Both nominalizations are derived by attaching the same nominalizing prefix *f-* to a verbal stem that contains the root and some additional voice morphology:

1. a. n.a.hita [f.an.ala.hidy] aho
 PST.AT.see NML.AT.remove.lock 1SG.NOM
 ‘I found a key. (*Lit. instrument used to remove lock with*)’
- b. ny f.an.doah.an-dRabe ny rindrina dia ilay fantsika
 D NML.AT.drill.CT/LNK-Rabe D wall TOP DEM nail
 ‘The (instrument for) Rabe’s drilling the walls is this nail.’

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It is proposed that the resulting nominalizations contain syntactic structures of different sizes and that the differences in syntactic behavior of the two nominalizations are directly related the size of structure they contain. In other words, the height of merger for the nominalizing prefix determines the morphosyntactic properties of the derived nominalization. The following table summarizes these properties:

Nominal Type	Internal Arguments		Adv.	Adj.	Implied Event	Episodic Reading	Possessor
	DP	Incorp.					
f-AT (1.a)	NO	YES	NO	YES	NO	NO	YES
f-CT (1.b)	YES	NO	YES	NO	YES	NO	YES

Table 1: Properties of Instrumental Nominalizations in Malagasy.

There are a number of assumptions that will be adopted in the paper without much discussion as they are supported by the data provided here and have been established independently in the related literature. I assume that nominalizations are formed in the syntactic component (c.f. Fu et al 2001, Alexiadou 2001, and others), and contain at least a vP/VP-core with a possible number of further functional projections (Borer 1993; Fu et al. 2001; Hazout 1995)). In terms of categorial status at least some nominalizers are (nominal) complementizers that derive a (reduced) headless relative clause whose structure is assumed to involve raising of a null operator to spec-CP (as discussed for example in Kayne (1994)).

$$[_{DP} D [_{CP} \mathbf{OP} I [_{NML} \dots [_{tI} \text{VP}_n [_{VP_{n-1}}]]]]]^1$$

Finally, nominalizers are assumed to attach at different heights in the clausal structure, resulting in nominalizations with gradient morphosyntactic properties: the higher the projection where the nominalizer merges the more verbal and less nominal properties the nominalization exhibits (Fu et al 2001, Alexiadou 2001, Schueler, 2004).

¹ The following conventions in abbreviating labels in the examples will be used: D, determiner; SG, singular; PL, plural; AT, agent topic focus or actor trigger; TT, theme topic focus or theme trigger; CT, circumstantial topic; NOM, nominative; GEN, genitive; LOC, oblique/prepositional case usually manifested as prefix *an-*; ASP, aspectual marker; PST, past tense; NML, nominalizer.

mood). The nominalization replaces the aspectual/tense prefix with the nominalizer *f*-. Thus the morphological template for the nominalization should be bracketed as follows:

$$[f \text{ } [an-/i- \text{ } [V_{\text{ROOT}}]]]$$

The following table contains examples of *f*-AT instrumental nominals:

ROOT	GLOSS	AT-VERB	GLOSS	NOMINAL	GLOSS
a. vaky	'split open'	mamaky	'to cut'	famaky	'axe'
b. zaitra	'sewing'	manjaitra	'to sew'	fanjaitra	'needle'
c. hogo	'haircut'	mihogo	'to comb'	fihogo	'comb'
d. rakotra	'cover'	mirakotra	'to cover'	firakotra	'blanket'

Table 2: *f*-AT nominalizations

In terms of semantic properties, the most prominent feature of these nominalizations is that they denote entities in the world that are [-ANIMATE]. In this respect they contrast with *mp*-nominalizations that are exclusively [+ANIMATE], deriving agentive nominalizations in Malagasy that are similar to English *-er* nominalizations. Contrary to English though, where *-er* nominals denote both actors and instruments (see Rappaport & Levin 1992; Van Hout & Roeper 1998), in Malagasy the two types of nominals have distinct morphology.

In the relevant literature *f*-AT instrumentals are traditionally characterized as "lexicalized" (Keenan and Polinsky 1998; Paul 1996), i.e. forms that are not transparent to syntactic operations. Considering productivity, *f*-AT nominals are the least productive nominals in Malagasy (if we exclude a handful of *f*-TT nominals, see Ntelitheos forthcoming). As far as I know, no new forms have been added to the language for a number of years. A search of Richardson (1885) revealed around forty *f*-AT tokens of instrumental nominals that denote some type of tool (see Ntelitheos (forthcoming) for a complete list). To these we can add forms that could be understood as instrumentals in some sense, but are used primarily for naming species of plants or animals and magical charms used to ward off evil spirits, especially in events like bull-fighting. Their limited productivity may be due to the effects of some sort of 'blocking' (Aronoff 1976:43), i.e. the process that restricts the formation of a potentially regular form due to the presence in the language of another synonymous (or near synonymous) form (e.g. English *thief*/**stealer*). *f*-AT nominals completely exhaust the list of tools that are used in basic everyday human activities. For the derivation of more

specialized instruments and to coin new tools speakers use *f*-CT instrumental nominals (see section 3.2).

Finally, *f*-AT instrumentals are homophonous with a number of productive manner nominalizations, and it is usually the contexts that determines their interpretation. Thus, *fanjaitra* can mean both ‘needle’ and ‘way of sewing’ depending on the context. I will not discuss here the use of *f*-ATs as manner nominals (but see Ntelitheos, forthcoming).

3.2 Nominalizer *f*- + CT form (*f*-CT)

The second type of instrumental nominalization under investigation is formed by prefixing the nominalizer *f*- to the CT form of the verb (2.c). The CT verbal form is derived by attaching the AT prefix *an-/i-* to the verbal root and subsequently attaching the CT suffix *-an*, and a tense prefix, which is null for present tense, *n-/no-* for past or *h-/ho-* for future/irrealis. The nominalization replaces the tense prefix with the nominalizer *f*- (see Table 3)². The morphological template for *f*-CT nominalizations therefore would have the following form:

$$[f- [[an-/i- [V_{\text{ROOT}}]]-an]]$$

Table 3 lists some *f*-CT instrumental nominals with the corresponding roots and verbal forms from which they are derived:

ROOT	GLOSS	CT-VERB	NOMINAL	GLOSS
a. ravona*	(level)	andravonana	fandravonana	‘tool for leveling
b. loaka	‘hole’	andoahana	fandoahana	‘tool opening holes’
c. tovo*	(fill)	anovozana	fanozovana	‘bucket’
d. ady	‘fighting’	iadiana	fiadiana	‘weapon’
e. pasoka	‘ironing’	ipasohana	fipasohana	‘iron’

Table 3: *f*-CT Nominalizations

f-CT nominalizations are very productive with hundreds of forms available and new forms introduced in the language. They form homophonous locative, manner and action or abstract nominalizations with the latter being

² A star symbol (*) next to a root means that the root is not found in isolation. In these cases the meaning of the root is given in parenthesis to show its semantic contribution when deriving verbal or nominal stems.

the most productive. We will consider only their instrumental use in this paper (but see Ntelitheos, forthcoming) for a detailed discussion of all *f*-nominals in Malagasy).

4 Properties of Malagasy Instrumental Nominalizations

4.1 Nominalizer *f*- + AT form (*f*-AT)

Given their morphological shape, *f*-AT nominals must contain at least the lower thematic vP-domain (the root domain) and AT voice morphology. Contra Pearson (2001, 2005) it is assumed here that Voice morphology merges directly above vP and attracts the higher verbal argument in its specifier.

It is also assumed that verbal arguments are NPs with no other functional material available. Consequently, they need to be ‘quantized’ (i.e. receive Number, Definiteness and Case properties) outside the lower thematic domain and presumably the voice domain (see Sportiche 2005). As a result, any VP-internal arguments cannot surface as (case-marked) DPs but only as incorporated³ arguments. This seems to be confirmed by the data:

3. a. n.a.hita [f.an.ala.hidy] aho
 PST.AT.see NML.AT.remove.lock 1SG.NOM
 ‘I found a key. (*Lit. instrument used to remove lock with*)’
- b. * n.a.hita [f.an.ala.ny hidy] aho
 PST.AT.see NML.AT.remove.D lock 1SG.NOM
 ‘I found a (instrument used to remove the lock with) key.’
- c. * n.a.hita [ny f.an.ala.azy] aho
 PST.AT.see D NML.AT.remove.3SG.ACC 1SG.NOM
 ‘I found the instrument one removes it with.’

As we can see, in (3.b-3.c) the *f*-AT nominal cannot contain a definite DP (determiner + NP or pronoun). Therefore the projections where these phrase merge cannot be available in the contained structure.

³ I assume that the incorporated argument is the NP in VP-internal position without any functional layers. This is supported by the fact that these NPs are not referential and cannot be modified by adjectives or relative clauses.

Adverbs also merge outside the VP domain and at least as low as VoiceP (Cinque 1999). Therefore, adverbial modification should be impossible with *f*-AT nominalizations⁴:

4. a. * [ny f.an.ala.hidy tsara] dia an-dRabe
 D NML.AT.remove-lock well TOP LOC-Rabe
 ‘The instrument that removes locks well is Rabe’s’
- b. * [ny f.an.ala.hidy nandritry ny adiny telo] dia an-dRabe
 D NML.AT.remove.lock throughout D hour three TOP LOC-Rabe
 ‘The instrument that removed locks for three hours is Rabe’s’

In English there is a distinction with respect to whether an event is implied, between nominalizations with PP-arguments and compounds (Rapaport & Levin 1992; Van Hout & Roeper 1998).

5. a. The lawn-mower just walked in.
 b. The mower of the lawn just walked in.

In *f*-ATs as we have seen (examples in 3) DPs are not possible inside the nominalization and the only possibility for an argument to surface is by incorporation to the verb, forming a synthetic compound. We thus expect these nominalizations to never imply an event. This is also confirmed by the data. The nominal *fanalahidy* means ‘an instrument for lock-removing’ even if there has never been an event of removing locks.

In terms of nominal properties, *f*-ATs allow for a possessor to modify the nominalization:

6. n.a.hita [ny f.an.ala.hidin-dRabe] aho
 PST.AT.see D NML.AT.remove.lock.LNK-Rabe 1SG.NOM
 ‘I found Rabe’s key.’

They also allow for modification by adjectives (7.a), numerals (7.b), quantifiers (7.c), and relative clauses (7.d):

7. a. n.a.hita [ny f.an.ala.hidy lehibe] aho
 PST.AT.see D NML.AT.remove.lock big 1SG.NOM
 ‘I found the big key.’

⁴ Given that *tsara* in (4.a) can also be used as an adjective the sentence is grammatical with the meaning ‘The good key is Rabe’s’.

- b. hita.ko [ny f.an.oto roa]
 see.1SG/GEN [D NML.AT.pound two]
 ‘I found the two pestles.’
- c. hita.ko [ny f.an.oto rehetro]
 see.1SG/GEN [D NML.AT.pound all]
 ‘I found all the pestles.’
- d. hita.ko [ny f.an.oto (izay) no.vid.in-dRabe]
 see.1SG/GEN [D NML.AT.pound (that) PST.buy.TT/LNK-Rabe]
 ‘I found the pestle that Rabe bought.’

Therefore, the whole range of nominal modifiers is available in *f*-AT instrumental nominalizations and consequently most of the hierarchical nominal functional domain must be contained in these nominalizations.

4.2 Nominalizer *f*- + CT form (*f*-CT)

Turning now to *f*-CT nominalizations, given their morphological shape and syntactic behavior, it is assumed that they contain a richer syntactic structure including the lower (thematic) domain, voice morphology and the higher functional domain where internal verbal arguments are ‘quantized’. The prediction then is that these nominalizations should allow for independent expression of the internal argument as a (case-marked) DP:

8. [ny f.an.doah.an-dRabe (ny) rindrina] dia ilay fantsika
 D NML.AT.drill.CT/LNK-Rabe (D) wall TOP DEM nail
 ‘The (instrument for) Rabe’s drilling (the) walls is this nail.’

Given the availability of higher functional projections where internal arguments can be quantized, one would expect incorporation not to be an available option for *f*-CT nominals. The data seem to indicate that this prediction is wrong:

9. [ny f.an.doah.an-drindrin-dRabe] dia ilay fantsika
 D NML.AT.drill.CT-wall.LNK-Rabe TOP DEM nail
 ‘Rabe’s (instrument for) drilling walls is this nail.’

However, the NP-theme in (9) can be modified by adjectives or relative clauses, and can be referential. Therefore, I term this process pseudo-incorporation (following Massam 2001) and assume that the NP has vacated the VP and has been ‘quantized’ in some projection XP, outside the

thematic and voice domains. Pseudo-incorporation takes place when the predicate (possibly VoiceP) inverts and lands in a position phonologically adjacent to the NP-theme (in other words no overt material intervenes between them).

Going back to the possibility of interpreting the instrumental nominalization as eventive, we see that contrary to *f*-AT nominals, *f*-CT nominals are interpreted as eventive when a definite argument is present:

10. ny f.an.doah.an-dRabe (ny) rindrina dia ilay fantsika
 D NML.AT.drill.CT/LNK-Rabe (D) wall TOP DEM nail
 ‘The (instrument for) Rabe’s drilling (the) walls is this nail.’

In (10) some event of ‘wall-drilling’ must have taken place.

One thing that distinguishes morphologically *f*- nominals from their clausal counterparts is the lack of tense morphology. In current approaches on the syntax/semantics of tense (c.f. Zagana 1990; Stowell 1996), tense orders the event relative to some reference time. This time is the moment of speaking in main clauses or the main predicate’s event time in subordinate clauses. This partition of the time reference information predicts that only when tense is syntactically present is there obligatory anchoring of the event to some reference time. If tense is not available, an event may be implied but it is not necessarily anchored. The prediction then is that tenseless nominalizations may not acquire an episodic interpretation but can be interpreted only as habitual⁵. This is true for the example in (10). If an episodic reading needs to be forced, then the corresponding tensed headless relative clause is used:

11. ny n.an.doah.an-dRabe rindrina omaly dia ilay fantsika
 D PST.AT.drill.CT/LNK-Rabe wall yesterday TOP DEM nail
 ‘The (instrument for) Rabe’s drilling walls yesterday is this nail.’

f-CT nominalizations exhibit a distribution of adverbial modifiers that is identical to the one exhibited in clauses (compare (12.a) to (12.b):

12. a. n.an.doah.an-dRabe rindrina tsara ilay fantsika
 PST.AT.drill.CT/LNK-Rabe wall well DEM nail
 ‘This nail, Rabe drilled walls well (with it).’

⁵ This still leaves the option of allowing tenseless nominalizations with an episodic interpretation when some other mechanism can anchor the event relevant to the moment of speaking. In Malagasy, for example, this can be done when a preposition or locative adverbial is present, since both of these elements carry tense marking.

- b. ny f.an.doah.an-dRabe rindrina tsara dia ilay fantsika
 D NML.AT.drill.CT/LNK-Rabe wall well TOP DEM nail
 ‘The (instrument for) Rabe’s drilling walls well is this nail.’

On the other hand adjectival modification is not possible with *f*-CTs that contain a definite theme argument:

13. * ny f.an.doah.an-dRabe rindrina kely dia ilay fantsika
 D NML.AT.drill.CT/LNK-Rabe wall small TOP DEM nail
 ‘The small (instrument for) Rabe’s drilling walls is this nail.’

Finally, *f*-CT nominalizations license possessors:

14. ny f.an.doah.an-drindrina-dRabe dia ny fantsika
 D NML.AT.drill.CT-wall.LNK-Rabe TOP D nail
 ‘Rabe’s (instrument for) drilling walls is a nail.’

Given that in the corresponding verbal clauses the linked element is an actor, it is not immediately clear why *Rabe* in (14) should be interpreted as a possessor. However, as Ntelitheos (2005b) has shown, when pseudo-incorporation takes place, the linked element is a possessor. Some evidence for this comes from examples like (15):

15. ?? ny f.an.doah.an-drindrina-dRabe dia an-dRaso
 D NML.AT.drill.CT-wall.LNK-Rabe TOP LOC-Raso
 ‘Rabe’s (instrument for) drilling walls is Raso’s.’

In (15) the linked element *Rabe* is interpreted as a possessor and therefore a second possessor *Raso* is pragmatically irregular. No problem arises in sentences where the linked element is interpreted as an actor (see Ntelitheos 2005b for discussion on the interpretation of linked subjects in Malagasy):

16. ny f.an.doah.an-dRabe rindrina dia an-dRaso
 D NML.AT.drill.CT/LNK-Rabe wall TOP LOC-Raso
 ‘The instrument for Rabe’s drilling walls belongs to Raso.’

5 Analysis

It is assumed that the nominalizing prefix *f-* is a nominal complementizer (C^0). We understand the label C^0 as a general label for functional elements in accordance with recent proposals on the syntax of functional elements as complementizers (c.f. the analyses of English *of* and French *de* in Kayne 2002, other prepositional elements in Cinque 2006, C/D nominal clauses in Maasai, in Koopman 2005, and others). Given its status as a nominal complementizer, *f-* merges at different levels in the clausal spine creating reduced CP domains that have the structure, semantics, and (sometimes) distribution of relative clauses. I will adopt here, without further discussion, Kayne's (1994) analysis of relative clause structure, where a determiner selects for a clausal string (CP), the specifier of which is the landing site of the raising of what is traditionally called the 'head' of the relative clause. However, I will assume that the domain of the nominalization is something smaller than a DP (see also Koopman 2005 where the functional element is labeled D/C), its size being determined by the height of merger of the nominalizer. Therefore, there may be available space for nominal modifiers to merge between the nominalization and the definite determiner. In this sense the nominalizer acts as a 'linker' (c.f. Den Dikken and Singhapreecha 2004; Den Dikken forthcoming). In Den Dikken's approach a 'linker' is any functional element that licenses a predicate or its subject in its specifier. In the case of Malagasy nominalizations, *f-* is a linker that attracts the subject/null operator to its specifier (see Ntelitheos (forthcoming) for detailed discussion).

Given the data discussed in Section 4.1, in *f*-AT clauses the initial structure seems to contain at least vP, i.e. the domain where the thematic properties are satisfied:

$$17. \quad [_{CP} f- [_{VOICE} \underbrace{[_{VOICEP} \textit{an-}]}_{VOICE} [_{VP} [_{THEMATIC} [_{VP1} \textit{INSTR} [_{DOMAIN} [_{VP2} \textit{THEME}]]]]]]]]$$

VoiceP attaches and creates the projection for the highest argument to be licensed. Since in these cases the actor is always unexpressed (or not present as in Alexiadou's (2001) "light" v account) the highest argument is the instrumental operator which is licensed in spec-vP. The fact that both instruments and actors can be licensed in spec-vP accounts for the empirical generalization that in numerous languages agentive and instrumental nominalizations are expressed morphologically in a similar way (c.f. Comrie & Thompson 1985). Subsequently, the nominalizer attaches, creating a reduced relative and attracting the operator to its specifier. The resulting structure is interpreted roughly as '(instrument) (one) VPs with'.

The projection where the theme is quantized is not available and thus the only remaining option for the internal argument is to appear incorporated inside the VP. Adverbs merge above VoiceP and thus no adverbial modification is allowed.

The headless reduced relative has the distribution of an NP. With respect to its extended projection it behaves like common nouns in that it allows for adjectives, numerals, quantifiers, relative clauses and possessors to be licensed (examples (6) and (7.a-7.d); see Ntelitheos 2005a, 2005b, for discussion of possessor licensing and adjectival modification in these nominalizations):

18. [DP *ny* ... [PossP... [AP... [CP *f*- [VoiceP *an*- [vP [VP1 INSTR [VP2 THEME]]]]]]]]
 NOMINAL DOM. VOICE THEMATIC DOMAIN

Turning now to *f*-CT clauses, we have seen in Section 4.2 that they exhibit a greater number of clausal properties than *f*-AT nominals. In the analysis adopted here this seems to indicate that more verbal functional layers are contained in these nominalizations. The bracketed representation in (19) exhibits the minimum structure (details omitted) that they contain:

19. [DP [CP [AdvP [EventP [DefP [CaseP [XP [Voice(CT)P [VoiceP [vP [VP1 [VP2]]]]]]]]]]]]]
 FUNCT. DOMAIN QUANT. VOICE THEMATIC DOMAIN

The structure now is ‘big’ enough to include the projection where themes are quantized and thus definite themes are expected to appear with *f*-CT nominalizations (see example (8)). If the theme is indefinite it stops at spec-XP and the predicate (VoiceP) inverts over it allowing for phonological adjacency between VoiceP and the Theme. Thus, pseudo-incorporation can take place.

The clausal structure contains at least one aspectual projection (EventP), which binds the event variable (Travis 2000a, 2000b; Pearson 2001, 2005). An event co-occurs with definite themes and thus it is assumed to merge above DefP. Since EventP is available inside *f*-CT nominalizations that contain a quantized theme, an event is implied in these cases. This functional domain is also where adverbs merge and thus adverbial modification is allowed (see example (12)). Since the domain where adverbial modifiers merge is contained in the clausal string within the nominalization no adjectival modifiers are expected (13). This is compatible with proposals that assume that the nominalizer interrupts and changes the ‘extended projection’ (Grimshaw 2000) of the lexical base (c.f.

Schueler 2004). Finally, possessors merge outside the nominalization and therefore they are expected to appear with *f*-CT nominalizations (14).

6 Conclusion

I have shown that the distribution of instrumental nominals in Malagasy is explained if we assume that nominalizers can attach at different heights in the clausal structure. The morphological templates of section (3) are shown to be uninformative with respect to the morphosyntactic properties and distribution of these nominalizations. It has been shown that if these templates are translated into the syntactic structures of (17-19) we obtain a much more elegant account of the syntactic behavior of *f*-nominals in Malagasy. The broader consequence is that processes that are traditionally assumed to fall within a separate morphological component can be explained by using independently motivated syntactic tools. A number of theoretical and empirical issues need to be resolved. One of the fundamental questions that this research raises is what restricts the distribution of nominalizers intra- and crosslinguistically and how to account for gaps in their distribution. For example, why it is not possible to form *f*-nominalizations with the TT form in Malagasy (excluding a few unproductive forms)?

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